DRAFT
ENGINEERING EVALUATION
VERIZON WIRELESS (HWY 780 SOUTHAMPTON)
PLANT NO. 17389
APPLICATION NO. 13616

BACKGROUND

Verizon Wireless (HWY 780 SOUTHAMPTON) is applying for an Authority to Construct and/or Permit to Operate for the following equipment:

S-1 Stationary Standby Generator: Diesel Engine; Make: John Deere; Model: 5030HF270; Rated Horsepower: 96 HP

The standby generator will be used at 1100 Southampton Road, Benicia, CA 94510.

The generator set will provide emergency power (in the event of a blackout) for all essential electricity power at the Verizon Wireless (HWY 780 SOUTHAMPTON) facility. This emergency engine must be periodically tested to ensure that they will generate when needed.

EMISSIONS SUMMARY

Annual Emissions:

Component	(g/bhp-hr)
NOx	4.920
CO	trace
POC	0.340
PM_{10}	0.090
SO2*	0.184

**The emission factor for SO2 is from Chapter 3, Table 3.4-1 of the EPA Document AP-42, Compilation of Air Pollutant Emission Factors.*
SO_2 8.09E-3 (% S in fuel oil) lb/hp-hr = 8.09E-3 (0.05% S) (454 g/lb) = 0.184 g/hp-hr

Component		g/bhp-hr	hp	hr/yr	lb/g		lb/yr		TPY
NOx	=	4.920	96	30	0.0022026	=	31.21	=	0.015605
CO	=	0.000	96	30	0.0022026	=	0	=	0
POC	=	0.340	96	30	0.0022026	=	2.15679	=	0.0010784
PM10	=	0.090	96	30	0.0022026	=	0.57091	=	0.0002855
SO2	=	0.184	96	30	0.0022026	=	1.1672	=	0.0005836

Maximum Daily Emissions:

A full 24-hour day will be assumed since no daily limits are imposed on intermittent and unexpected operations.

POLLUTANT		g/bhp-hr	hp	hr/day	lb/g		lb/day
NOx	=	4.920	96	24	0.0022026	=	24.96797
CO	=	0.000	96	24	0.0022026	=	0
POC	=	0.340	96	24	0.0022026	=	1.725429
PM10	=	0.090	96	24	0.0022026	=	0.456731
SO2	=	0.184	96	24	0.0022026	=	0.933761

Plant Cumulative Increase: (tons/year)

POLLUTANT	Existing	New	Total
NOx		0.015605	0.015605
CO		0.000000	0.000000
POC		0.001078	0.001078
PM10		0.000286	0.000286
SO2		0.000584	0.000584

Toxic Risk Screening:

The toxic emission of diesel particulate does not exceed the District Risk Screening Trigger, as shown in Table (1) below, and a Risk Screening Analysis is not required.

Table 1

Source	PM_{10} Emission Factor (g/bHP-hr)	HP	Annual Usage (Hours/year)	Diesel Exhaust Particulate Emissions (lb/year)	Trigger Level (lb/yr)	Risk Screen Required? (Yes/No)
1	0.09	96	30	0.571428571	0.58	NO

The manufacturer supplied, ISO 8178-D2 test cycle data to CARB. The CARB staff has determined that the John Deere engine model listed above is in compliance with the PM emission requirements (0.15g/bhp-hr) from California Code of Regulations Title 17, Section 93115 (e)(2)(A) 3., Table (Summary of the Emission Standards and Operating Requirements for Stationary Emergency Standby Diesel-Fueled CI Engines greater than 50bhp). Therefore, the above John Deere engine model qualifies for use in California for standby generator set applications operating less than 50 hours per year for maintenance and testing.

STATEMENT OF COMPLIANCE

S-1 will be operated as emergency standby engines and therefore are not subject to the emission rate limits in Regulation 9, Rule 8 ("NOx and CO from Stationary Internal Combustion Engines"). S-1 is subject to the monitoring and record keeping requirements of Regulation 9-8-530 and the SO2 limitations of 9-1-301 (ground-level concentration) and 9-1-304 (0.5% by weight in fuel). Regulation 9-8-530 requirements are incorporated

into the proposed permit conditions. Compliance with Regulation 9-1 is expected since diesel fuel with a 0.05% by weight sulfur is mandated for use in California. Like all sources, S-1 is subject to Regulation 6 ("Particulate and Visible Emissions"). This engine is not expected to produce visible emissions or fallout in violation of this regulation and they will be assumed to be in compliance with Regulation 6 pending a regular inspection.

This diesel engine is subject to the Stationary Diesel Engine Air Toxics Control Measure (ATCM) and is considered a new stationary emergency standby diesel engine since it will be installed after January 1, 2005 and is larger than 50 HP. The requirements of the ATCM will be include in the permit conditions.

This application is considered to be ministerial under the District's proposed CEQA guidelines (Regulation 2-1-312) and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.3.

The project is within 1000 feet from the nearest school and therefore subject to the public notification requirements of Reg. 2-1-412.

Best Available Control Technology:

In accordance with Regulation 2, Rule 2, Section 301, BACT is triggered for any new or modified source with the potential to emit 10 pounds or more per highest day of POC, NPOC, NOx, CO, SO_2 or PM_{10}.

Based on the emission calculations above, the owner/operator of S-1 is subject to BACT for the following pollutants: NOx and CO. BACT 1 levels do not apply for 'engines used exclusively for emergency use during involuntary loss of power' as per Reference b, Document 96.1.2 of the BAAQMD BACT Guidelines for IC Engines. Hence, the owner/operator has to the meet BACT 2 limits presented below.

POLLUTANT	BACT 1. Technologically Feasible/ Cost Effective 2. Achieved in Practice 3. TBACT	TYPICAL TECHNOLOGY
NOx	1. *1.5 g/bhp-hr [107 ppmvd @ 15% O_2] a,b* 2. *6.9 g/bhp-hr [490 ppmvd @ 15% O_2] a,b,c* 3. *6.9 g/bhp-hr [490 ppmvd @ 15 % O_2]*	1. *Selective Catalytic Reduction (SCR) + Timing Retard + Turbocharger w/ Intercooler a,b* 2. *Timing Retard $\leq 4^o$ + Turbocharger w/ Intercooler a,b,c* 3. *Timing Retard $\leq 4^o$ + Turbocharger w/ Intercooler*
CO	1. *n/s* 2. 2.75 *g/bhp-hr [319 ppmvd @ 15% O2] b,c*	1. *Catalytic Oxidation b* 2. *CARB or EPA (or equivalent) low-CO emitting certified engine b,c*

For NOx, and CO, the emission limits set by BACT 2 are met, as shown in Table (2) below.

Table (2)

Pollutant	Engine Emission Factors with Catalyst (g/hp-hr)	Emission Factor Limits as set by BACT 2 (g/hp-hr)	Have the limits been met?
NOx	4.92	6.9	YES
CO	trace	2.75	YES

Therefore, S-1 is determined to be in compliance with the BACT 2 limits for NOx and CO.

Since CARB certification data was used to establish the NOx and CO emission factors, the BACT 2 emission limits have not been incorporated into the permit conditions and are assumed to be complied with through the design standards demonstrated by the CARB certification testing.

Offsets: Offsets must be provided for any new or modified source at a facility that emits more than 10 tons/yr of POC or NOx. Based on the emission calculations above, offsets are not required for this application.

PSD, NSPS, and NESHAPS do not apply.

PERMIT CONDITIONS

Application 13616; Verizon Wireless (HWY 780 SOUTHAMPTON); Plant 17389; Conditions for S-1 Emergency Diesel Generator Set:

PC # 22665

1. The owner or operator shall operate the stationary emergency standby engine, only to mitigate emergency conditions or for reliability-related activities (maintenance and testing). Operating while mitigating emergency conditions and while emission testing to show compliance with this part is unlimited. Operating for reliability-related activities is limited to 30 hours per year.

(Basis: Toxics)

2. The Owner/Operator shall equip the emergency standby engine(s) with:
   a. a non-resettable totalizing meter with a minimum display capability of 9,999 hours that measures the hours of operation for the engine.

(Basis: “Stationary Diesel Engine ATCM” section 93115, title 17, CA Code of Regulations, subsection (e)(4)(G)(1))

3. Records: The Owner/Operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry. Log entries shall be retained on-site, either at a central location or at the engine’s location, and made immediately available to the District staff upon request.
   a. Hours of operation (maintenance and testing).
   b. Hours of operation for emission testing.
   c. Hours of operation (emergency).

d. For each emergency, the nature of the emergency condition.
e. Fuel usage for engine.
f. CARB Certification Executive Order for the engine.

(Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, Subsection (e)(2)(F)(4)(I), Regulation 1-441, Toxics)

4. The Owner/Operator shall not operate stationary standby diesel-fueled CI engine for non-emergency use, including maintenance and testing, during the following periods:
   a. Whenever there is a school sponsored activity, if the engine is located on school grounds, and
   b. Between 7:30a.m. and 3:30p.m. on days when school is in session.

(Basis: ATCM)

RECOMMENDATION

Issue an Authority to Construct to Verizon Wireless (HWY 780 SOUTHAMPTON) for the following source:

S-1 Stationary Standby Generator: Diesel Engine; Make: John Deere; Model: 5030HF270; Rated Horsepower: 96 HP

EXEMPTIONS

None.

By:_____ Date:_____

Myoung William Chung
Air Quality Engineering Intern